

REMARKS

Claims 1-18 are in the case. The drawing sheet containing FIGS. 2A and 2B has been amended per the examiner's requirement. Claim 1 was amended to overcome the objection thereto. Claims 6, 7, and 12-18 were amended to more clearly and distinctly claim the invention. Support for the amendment to claims 6, 7, and 12-18 can be found in the specification and in the original claims. No new matter is entered into the case by the amendment.

In the office action, FIGS. 2A and 2B and claim 1 were objected to, and claims 6 and 13-18 are rejected under 35 USC §112, second paragraph, as being indefinite. Claims 1-18 are rejected under 35 USC § 102 as being anticipated by U.S. Patent No. 6,512,284 to Schulte et al. Reconsideration and allowance of the claims are requested in view of the foregoing amendments and following remarks.

DRAWING OBJECTION OVERCOME BY THE AMENDMENT

The drawings are objected to because of informalities. The drawings are hereby amended as described above to overcome the informalities. A marked-up drawing sheet containing FIGS. 2A and 2B along with a replacement sheet containing the corrected figures are attached. In view of the amendment, withdrawal of the objection to the drawings is respectfully requested.

CLAIM 1 OBJECTION OVERCOME BY THE AMENDMENT

In the objection to claim 1, the examiner asserted that the claim was unclear as to which heater array is referenced. Claim 1 has been amended and the alleged ambiguity is believed to have been removed. In view of the amendment to claim 1, reconsideration and withdrawal of the objection are hereby requested.

CLAIMS 6, 13, AND 17-18 REJECTIONS UNDER §112, SECOND PARAGRAPH OVERCOME BY THE AMENDMENT

Claims 6, 13, 17 and 18 are hereby amended as given above to overcome the rejection based on 35 USC § 112, second paragraph. In the amendment to claims 6, 13, and 17-18, it is clarified that the inactive structure is effective to reduce current path

resistance variations between an active heater adjacent the end of the heater array and other active heaters in the active heater array. Hence, it is believed that, with the foregoing amendments, claims 6, 13, 17 and 18 now more particularly point out and distinctly claim the respective inventions. In view of the amendments to claims 6, 13, and 17-18, reconsideration and withdrawal of the 35 USC § 112, second paragraph rejection of claims 6, 13, and 17-18 are respectfully requested.

CLAIMS 1-18 ARE PATENTABLY DISTINCT OVER THE CITED REFERENCE.

Prior art active heater resistors at the end of heater arrays tend to have relatively higher current path resistances than active heater resistors that are not adjacent the end of the heater arrays. Accordingly, relatively higher amounts of energy are dissipated when “firing” active heater resistors adjacent the ends of the heater arrays.

Claim 1 of the present invention requires an inactive heater array to be located adjacent to and extending away from the end of an active heater array. The inactive heater array provides not only a region adjacent the end of the active heater array that is substantially planar, but also a plurality of current paths for an active heater resistor adjacent the end of the active heater array. Having such a plurality of current paths reduces energy differences between a heater resistor adjacent the end of the active heater array and other heater resistors in the active heater array.

In the 35 USC § 102 rejection of claims 1-18, the ‘284 patent is cited. The ‘284 patent is directed to a semiconductor antifuse device that can be actively programmed for either high or low resistance by providing a programming current to the antifuse devices. As indicated by the ‘284 patent in Column 1, lines 12-13, these devices are typically used to store data. Contrary to the apparent assertion by the Examiner, the ‘284 patent fails to teach anything regarding, for example, an inactive heater array providing a plurality of current paths which reduce energy differences between a heater resistors adjacent the end of the active heater array and other heater resistors in the active heater array, let alone such an inactive heater array providing a plurality of current paths for an active heater resistor adjacent the end of the active heater array, as added by the current amendment.

In fact, the ‘284 patent does not appear to discuss anything regarding interactions between its antifuse 30 and resistive element 23 of firing chamber 20. The closest relevant discussion appears to be found in its Column 3, at lines 51-53, wherein it is

noted that control logic propagates firing signals over line 42 to firing chamber 20 and programming and/or read signals over line 41 to antifuse 30. If anything, this appears to further support that there is not a current path for a resistive element 23 of firing chamber 20 that is provided by an antifuse 30. Fig. 1 further clarifies this separation (note the separate and distinct lines 41 and 42).

In making the rejection, the Examiner cited column 2, lines 48-55, and column 3, lines 35-40, lines 50-52, and Fig. 1. Applicants find no discussion in these sections regarding a plurality of current paths for an active heater resistor adjacent the end of the active heater array which reduce energy differences between a heater resistor adjacent the end of the active heater array and other heater resistors in the active heater array. Accordingly, the '284 patent fails to provide all of the elements of the claimed invention. Reconsideration and withdrawal of the § 102 rejection of claim 1 (and claims 2-5 which depend therefrom) is respectfully requested.

Similarly, independent claims 6 and 13 each require an inactive structure effective to reduce current path resistance variations between an active heater resistor adjacent the end of the active heater array and other active heater resistors in the active heater array. In previously rejecting claims 7 and 16, for example, the Examiner cited columns 2, line 64 to Column 3, line 10, and/or Column 3, lines 21-34. These sections of the '284 patent discuss what happens when certain currents are propagated through an antifuse 30, but do not at all discuss, teach or suggest any interaction between such currents and a firing chamber 20 or its resistive element 23, let alone current path resistance variations between resistive elements 23. Instead, as referred to above, the '284 patent discloses using a separate and distinct line 41 to propagate a signal to program or read antifuse 30. Applicants cannot find anything in the '284 patent that appears to suggest that line 41 would somehow also provide a current path for a resistive element 23 of a firing chamber 20, or that this somehow effects the current path resistance of a resistive element 23. Accordingly, the '284 patent fails to provide all of the elements of the inventions set forth in claims 6 and 13. Reconsideration and withdrawal of the § 102 rejection of claims 6 and 13 (and claims 7-12 and 14-18 which depend therefrom) is respectfully requested.

Claims 2-5 depend from claim 1, claims 7-12 and 18 depend from claim 6, and claims 14-17 depend from claim 13, and provide additional limitations in combination

with claims 1, 6, and 13. Accordingly, although claims 2-5, 7-12 and 14-18 are patentable over the '284 patent for the same reasons as claims 1, 6, and 13 are patentable over the '284 patent, they each include additional limitations which are separately patentable over the '284 patent.

For example, claim 7 depends from claim 6 and claim 16 depends from claim 13. Claim 7 requires that an inactive structure provide a plurality of current paths for one or more of the active heater resistors adjacent the end of the active heater array, which reduces an energy difference between the one or more of the active heater resistors adjacent the end of the active heater array and other heater resistors in the heater array. Meanwhile, claim 16 requires an inactive structure to provide a plurality of current paths for the active heater resistor adjacent the end of the active heater array, which reduce energy differences between the heater resistors adjacent the end of the active heater array and other heater resistors in the active heater array.

The only reference to a current path in the '284 patent is with respect to electrodes of an antifuse 30 and a control line 41. There is absolutely nothing in the '284 patent with regard to plural current paths for an active heater resistor, let alone to those being somehow provided by an antifuse 30. Accordingly, at least the aforementioned elements of claims 7 and 16 are absent from the '284 patent. Reconsideration and withdrawal of the rejection of claims 7 and 16 are respectfully requested.

As a further example of the separate patentability of the dependent claims, claim 17 depends from claim 13 and requires that the inactive structure be effective to improve ink bubble performance. There is nothing in the '284 patent with regard to a structure providing improved bubble performance. Accordingly, the rejection of claim 17 is wholly untenable and should be withdrawn.

CONCLUSION

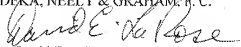
Applicants assert that the claims of the present application patentably define over the prior art made of record. Applicants respectfully submit that a full and complete response to the office action is provided herein, and that the application is in condition for allowance. Action in accordance therewith is respectfully requested.

In the event this response is not timely filed, applicants hereby petition for the appropriate extension of time and request that the fee for the extension be charged to deposit account 12-2355. If other fees are required by this amendment, such as fees for additional claims, such fees may be charged to deposit account 12-2252.

Respectfully submitted,

LUEDEKA, NEELY & GRAHAM, P. C.

By:



David E. LaRose

Reg. No. 34,369